09/185,097 filed on November 3, 1998, the parent application

of the present continuation application.

Original claim 1 of the parent application reads as

follows:

> 1.   A digital magnetic
> recording/reproducing apparatus for
> recording and reproducing digital
> information comprising:
>
> Viterbi detection means for decoding
> a signal sequence obtained by partial
> response equalization, and simultaneously
> producing n candidates of best data,
> second best data, third best data, ... , nth
> best data; and
>
> means for detecting error in each of
> said data sequences, and
> selecting/producing sequences with no
> error as correct decoded results.

In an Office Action dated September 13, 2000, issued in

the parent application, Examiner Paul N. Rupert, the original

Examiner of the parent application, rejected original claim 1

of the parent application under 35 USC 103(a) as being

unpatentable over Stenström et al. (U.S. Patent No. 5,822,340)

(Stenström) in view of Y. Lin et al., "A Generalized Viterbi

Algorithm for Detection of Partial Response Recording

Systems", IEEE Transactions on Magnetics, Vol. 32, No. 5,

September 1996, pp. 3983-3985 (Lin), with the Examiner

improperly relying on J. Lee et al., "An Advanced Winchester

Disk Controller", Proceedings of Technical Papers, 1989

International Symposium on VLSI Technology, Systems and

Applications, May 17-19, 1989, Taipei, Taiwan, pp. 376-379,

published by IEEE, 1989 (Lee), in support of the rejection

without including Lee in the statement of the rejection as

required by MPEP 706.02(j) (Seventh Edition, Revision 1, February 2000) referring to footnote 3 in the decision of <u>In re Hoch</u>, 428 F.2d 1341, 1342 n.3, 166 USPQ 406, 407 n. 3 (CCPA 1970). Stenström, Lin, and Lee are cited in the accompanying Information Disclosure Statement. Although this rejection was rendered moot by the cancellation of original claim 1 of the parent application in an amendment filed on December 13, 2000, in the parent application, the rejection is respectfully traversed insofar as it may be deemed to be applicable to claim 1 of the present continuation application.

Independent claim 1 of the present continuation application recites a digital magnetic recording/reproducing apparatus for recording and reproducing digital information comprising <u>a Viterbi decoder which decodes a signal sequence obtained by partial response equalization and produces n candidates of a decoded result, the n candidates being a best candidate to an nth best candidate and being produced simultaneously by the Viterbi decoder</u>, and a selector which detects errors in the n candidates, and selects a candidate having no detected errors from the n candidates as a correct decoded result.

In explaining the rejection of original claim 1 of the parent application in the Office Action of September 13, 2000, issued in the parent application, Examiner Rupert stated as follows:

> Claim 1 is rejected under 35 U.S.C. 103(a) as being unpatentable over Stenström et al. (US 5822340) and Yinyi Lin and Char-Yuan Yeh; "A Generalized

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Viterbi Algorithm for Detection of Partial
Response Recording Systems", Magnetics,
IEEE Transactions on, Vol. 32 5 1, Sept.
1996, pp. 3983-3985.

What is claimed is digital magnetic
recording apparatus comprising a Viterbi
detector for decoding a signal sequence
obtained by partial response equalization,
which simultaneously produces n best
candidates of correctly decoded data
sequences, and a means for detecting an
error in the candidate data sequences and
selecting only a candidate data sequence
with no error. Lin et al. disclose the
use of a Viterbi detector in a high
density partial response recording system,
as claimed (a computer hard disk drive is
such a system). Lin et al further propose
to use the Generalized Viterbi Algorithm
(GVA) which presents as output a set of n
best candidate data sequences, as claimed.
Lin et al. does not discuss an error
detecting means for selecting only a
candidate sequence with no error but in
the field of high density magnetic
recording the use of error detecting and
correcting codes such as CRC codes (cyclic
redundancy check) is long known and
practiced (ref. Jiin Lee, Tzong-Dar Her,
Chun-Mei Lin, Po-Chuan Huang, Tain-Rein
Chen and Jun-Wei Jan "An Advanced
Winchester Disk Controller" VLSI
Technology, Systems and Applications,
1989. Proc. of Tech. Papers. 1989 Int
Symposium on, 1989, pp 376-379).
Stenström discloses that a CRC can be used
to select a candidate sequence from a set
of candidate sequences produced by a GVA
(col. 2 lines 35-42). It would have been
obvious to one of ordinary skill in the
art to select from the candidate data
sequences produced by the GVA application
proposed by Lin et al by means of the CRC
block code employed on hard disk drives in
order to select for output the candidate
data sequence which had no error.

At the outset, it is submitted that the rejection of

original claim 1 of the parent application set forth in the

Office Action of September 13, 2000, issued in the parent

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application was _improper_ because Examiner Rupert did _not_

include Lee relied on by the Examiner to support the rejection

in the statement of the rejection as required by MPEP

706.02(j) (Seventh Edition, Revision 1, February 2000)

referring to footnote 3 in the decision of In re Hoch, 428

F.2d 1341, 1342 n.3, 166 USPQ 406, 407 n. 3 (CCPA 1970) and

stating as follows in pertinent part:

> Where a reference is relied to support
> a rejection, whether or not in a minor
> capacity, that reference should be
> positively included in the statement of
> the rejection. See _In re Hoch, 428 F.2d
> 1341, 1342 n.3 166 USPQ 406, 407 n. 3
> (CCPA 1970)._

Footnote 3 of Hoch reads in pertinent part (emphasis

added):

> Where a reference is relied on to support
> a rejection, whether or not in a "minor
> capacity," there would appear to be no
> excuse for not positively including the
> reference in the statement of rejection.
> (Emphasis added).

Since Examiner Rupert did _not_ include Lee relied by the

Examiner to support the rejection of original claim 1 of the

parent application in the statement of the rejection of

original claim 1 of the parent application as required by Hoch

and MPEP 706.02(j), it is submitted that the rejection of

original claim 1 of the parent application set forth in the

Office Action of September 13, 2000, issued in the parent

application was _improper_, and that the Examiner did _not_

establish a _prima facie_ case of obviousness under 35 USC

103(a) with respect to original claim 1 of the parent

application.

Furthermore, it is submitted that Stenström, Lin, and Lee do not disclose or suggest the feature of claim 1 of the present continuation application wherein the n candidates of a decoded result are produced simultaneously by the Viterbi decoder. Although both Stenström and Lin appear to disclose a Viterbi decoder which produces n candidates of a decoded result as recited in claim 1 of the present continuation application, it is not seen where Stenström and Lin disclose or suggest that the n candidates of a decoded result are produced simultaneously by the Viterbi decoder as recited in claim 1 of the present continuation application.

Original claim 1 of the parent application recited a similar feature, i.e. Viterbi detection means for decoding a signal sequence obtained by partial response equalization, and simultaneously producing n candidates of best data, second best data, third best data, ... , nth best data. However, Examiner Rupert of the parent application did not explain where he considered the feature of original claim 1 wherein the Viterbi detection means simultaneously produces n candidates to be disclosed or suggested by Stenström, Lin, and Lee in explaining the rejection of original claim 1 of the parent application in the Office Action of September 13, 2000, issued in the parent application, wherein Examiner Rupert stated as follows with respect to Lin in pertinent part:

> Lin et al further propose to use the
> Generalized Viterbi Algorithm (GVA) which
> presents as output a set of n best
> candidate data sequences, as claimed.

and stated as follows with respect to Stenström:

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Stenström discloses that a CRC can be used to select a candidate sequence from a set of candidate sequences produced by a GVA (col. 2 lines 35-42).
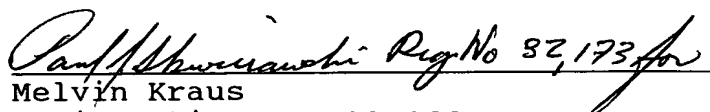
Accordingly, for the reasons discussed above, it is submitted that Stenström, Lin, and Lee do <u>not</u> disclose or suggest the feature of claim 1 of the present continuation application <u>wherein the n candidates of a decoded result are produced simultaneously by the Viterbi decoder</u>.

Since Stenström, Lin, and Lee do <u>not</u> disclose or suggest the feature of independent claim 1 of the present continuation application discussed above, it is submitted that independent claim 1 of the present continuation application patentably distinguishes over Stenström, Lin, and Lee in the sense of 35 USC 103(a), and an indication to that effect is respectfully requested.

Please charge any shortage in fees due in connection with the filing of this paper, or credit any overpayment of fees, to the deposit account of Antonelli, Terry, Stout & Kraus, LLP, Deposit Account No. 01-2135 (500.36707CX1).

Respectfully submitted,

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